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PHILOSOPHICAL AND SCIENTIFIC SPECIALIZATION.

IT is commonly agreed that the period from the mid-nineteenth century until about 1890 is one in which the study of metaphysics was at a low ebb. How German scholarship turned with the disgust of satiety from the all-dominating metaphysics of Hegel and immersed itself in the detailed, factual study of the physical sciences and of history is an oft-told story. For the time being philosophical study was identified with special disciplines such as theory of knowledge, the history of philosophy, psychology, and ethics, which were pursued for the most part without any serious attempt at correlation. The 'Return to Kant' which had become the ideal of German scholars of the second generation after Hegel, produced critical and philological apparatus of a thoroughness unexampled in the history of philosophy, but it treated the study of Kant as if it were an end rather than the means for the development of a new constructive point of view. Here and there, indeed, as in the philosophy of Herbert Spencer or the monism of Ernst Haeckel, attempts were made at broad and synthetic generalization, but the content of these philosophies was confined to a few exceedingly general and very abstract principles, such as the universality of causation or the conservation of energy, which in origin were not themselves the product of the period in question. Materialism, which a generation before had appeared as the scientist's last word in philosophy, proved too metaphysical for the prevailing distrust of metaphysics. The typical attitude of the period is to be found rather in positivism, if this word be used not only for the philosophy of Comte but also for the many similar but historically independent philosophies which aimed to be specifically anti-metaphysical.[1]

The distaste for metaphysics, however, was itself only a symptom of an intellectual change which affected the special sciences almost as much as it did philosophy. Never before had scientific specialization gone so far not only in marking off science from philosophy but also science from science. It was recognized that such specialization was a necessary condition of empirical investigation, and it was therefore welcomed, even in cases where specialization extended to incoördination. It was a period, one might almost say, of glorification of the varying 'points of view' of the different sciences. The time had gone by when a science could mark out for itself an exclusive subject matter which it could regard as its own peculiar property. Chemistry had made itself indispensable in the study of organic processes, and the concept of energy had enabled physics to consolidate its modes of dealing with many phenomena superficially quite diverse. But if there were no longer exclusive subject matters, there might still be exclusive points of view. A science was distinguished as the possessor of such and such categories, more or less clearly defined, and its problem was conceived as the application of these categories to all subject matters which would in any way lend themselves to such treatment. When the application of a given set of categories reached its limit, any outstanding problems had to be turned over to some other science. When, for example, Weismann had introduced into the study of inheritance as elaborate a system of hypothetical elements and compounds as he could well manage, he turned the problem of variation over to the chemist. Conversely, if the chemist met a bit of organization which proved recalcitrant after he had done his best at analysis, this could be turned over to the biologist. When worse came to worst, a problem which baffled everybody could still be passed on, not hopefully but rather in the mistrust of a better disposition of it, to a hypothetical metaphysician. By a judicious use of this transference of problems, a science could always maintain its autonomy and keep its unsolved difficulties in a state of decent unobtrusiveness.

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[1] *Cf.* W. Stern's *Vorgedanken zur Weltanschauung*, pp. 47 ff.

It is easy to find fault with this period as one of disorganization and philosophical superficiality, and one can judge from various signs that its day is past. And yet when the balance is finally struck, the gains will perhaps be as obvious as the losses. Never before was technical proficiency so carefully considered or so perfectly achieved. Never before was the extent of knowledge so greatly increased in a similar space of time or generalization based upon a larger or more systematically sought body of facts. Never was the intellectual conscience more tender or the reverence for accuracy and objectivity deeper or more wide-spread among scholars. And all these are phases of the intellectual life with which, it is safe to predict, no future period will be content to dispense. It must be recognized, indeed, that the search for facts in all departments of experience and the proliferation of specialties and subdivision among the sciences are indispensable phases of modern intellectual development. It is the parallel, and in part both the corollary and the presupposition, of modern industrial technology, which has destroyed the old distinctions of trades and crafts, of classes and castes, in order to mark new distinctions in new places.

Without attempting to assess the merits or the demerits of such a period as that in question, we may nevertheless hazard the guess that an isolation of science from science and of science from philosophy will not prove permanently satisfactory. In one way or another a higher degree of system will sooner or later be sought. Whether metaphysics will ever regain the position which it held a century ago is indeed open to doubt. Certainly it has not done so and there are, for the present, no signs that it will, though open unfriendliness between science and metaphysics is relatively rare. What is much more certain is that at any rate the various lines of scientific investigation will themselves draw closer together and mutually influence each other more than was allowed for by the logic of a period whose watch-word was positivism. Such interaction can scarcely be dispensed with by the sciences themselves and it is the vital condition for an effective metaphysics. For in such interactions relationships are implied which are the material of metaphysical investigation even before they are systematically stated. The greatest promise which the last twenty-five years have held for philosophy arises from the establishment of such relationships, particularly between biology and psychology and between psychology and philosophy.

Before we examine this interaction of sciences, however, it will be well to illustrate the tendency toward separation by considering an apparent exception, for this exception will serve to introduce what follows. The years between 1865 and 1890 saw in England and America the appearance and the remarkably rapid success of Neo-Hegelian idealism. During these years the traditional English philosophy, which had held the field for a century and a half, went down almost without a struggle, and philosophical writing and teaching were pretty completely revolutionized, so far as this writing and teaching emanated from those professionally interested in philosophy. The close of the century found this Anglicized Hegelianism everywhere in the ascendant in England and America. Germany stood aloof, with a smile for the 'good' German philosophers who had died and gone to Oxford. Now idealism has been in its intention first and always a metaphysics; whatever it stood for in ethics and logic was always understood to be preliminary to the establishment of metaphysical principles, or derivative from the consistent development of a certain metaphysical position. A large proportion of the writing of idealists, especially in the first generation, was given up to the criticism of positivism in Comte and J. S. Mill, of the Unknowable of Herbert Spencer, of ethical Utilitarianism, and of the sensationalist theory of knowledge which was the common root of all these. Both in criticism and construction idealism felt itself to be in possession of a single principle which enabled it to evaluate the conclusions of the special sciences, to view them all as contributing to a total understanding of man and nature.

Consequently the correlation of the separate results and points of view of scientific investigation was an integral part of the claim of idealism to be an all-inclusive philosophical system. It had inherited from the post-Kantian German philosophy a device for making precisely this correlation, the notion of a plan or map of the human intellect which, by displaying the categories of knowledge singly and in relation, should show at the source, so to speak, all the possible points of view from which the project of knowing could be carried forward. From Hegel it had inherited a special method for making clear the correlations of these points of view, the method of dialectic by which the inherent organization of the intellect made itself manifest in an ascending series of more and more self-consistent categories. In such a series the points of view of the special sciences would find their places as severally inadequate but collectively beneficent abstractions, instrumental in the business of bringing to light the richness and concreteness of the total system of reality. The principle was Hegel's reconstructed theory of contradiction as the instrument of an all-inclusive system. For these reasons idealism justly regarded itself as standing outside the general tendency toward discreteness and incoördination which marked the period that gave birth to it.

Still it may be doubted whether idealism was in its accomplished results as much of an exception to the general tendency as its program seems to indicate. Idealism has, indeed, a single point of view which it has worked out with a high degree of consistency. The doubt remains, however, whether its point of view was capable of application in such a way as to yield a really effective organization of scientific points of view. The fact is that the notion of dialectic has never had among English philosophers the vitality and seriousness which it had in the estimation of Hegel himself. The English idealists have been captivated rather by the ideal of dialectic than by its detailed elaboration; it represents a position which ought to hold rather than one which they have claimed to exhibit in detail. They have not only admitted but insisted that the dialectical transitions in Hegel's logic were often wire-drawn and artificial, and the improvements which they introduced were largely by way of making clearer the principles of the method. The detailed transitions were thus overlooked, since a particular failure in detail is rightly held not to invalidate the principle. But it is one thing to admit failure in particular cases and quite another to neglect the dialectical transitions altogether. The detailed transitions are, in fact, the heart and soul of the method. Some time or other they must be made out and no amount of clarity in the principle will do duty in place of a demonstration of its applicability. The dialectic was not strained or artificial for Hegel precisely because of his abiding faith in the method as a way of showing the logical structure of experience in detail; for him the principle was in the deepest sense operative. In its English and American development the correlations made out by the consistency logic were more formal than real. To do justice to the richness of reality a multitude of points of view were held to be necessary, and all points of view must be contributory to this end, but the highest ambition of Hegel's logic,—to show how all fruitful points of view are evolved in the course of the mind's coming to itself,—was hardly imitated.[1] The chill of scientific empiricism had struck to the heart of this romantic project. In effect, the idealist logic largely accomplished something not in principle unlike that which positivism itself undertook, though with quite a different bias. It showed that no single category could be regarded as the one key to unlock all doors, and thus it became one means to an effective criticism of naïve naturalism.[2] But this in itself falls far short of what idealism must do to maintain its position affirmatively, and too often the result was discredited in advance by an obvious willingness to become the means of moral and religious edification.

A separation of scientific points of view which was countenanced or even accentuated by idealism is to be found in the relations which were established between it and psychology. Idealism was perhaps on its strongest ground when it appeared as the critic of the traditional English sensationalism and of its various applications in ethics and political theory. At least so far as philosophy itself was concerned, it succeeded in a surprisingly short time in driving its well-established opponent from the field. Now this sensationalism, with the association of ideas as its principle, which in its traditional form had covered the fields both of psychology and philosophy, persisted in psychology long after idealism had established itself as philosophy in its stead. It is hardly open to doubt that structural psychology was, in fact, the residuary legatee of English Empiricism, in spite of the undoubted changes which it introduced. It did, indeed, insist, as Empiricism had not, upon the correlation of mental states with physiological processes, and more particularly it claimed to have transcended the older psychology in conceiving its mental elements as processes rather than as static bits of mind-stuff. The structural psychologist even admitted that his sensations were, in a sense, artifacts, defined, if not created, for purposes of a given scientific description, an admission which certainly would not have been made by James Mill, to say nothing of Berkeley and Hume.[1] Nevertheless, these changes were matters of detail as compared with the more fundamental identities which persisted. Structural psychology still regarded the mind as a complex of mental elements, mainly sensational, or sensational and affective, and its problem was still to analyze complexes into their constituent elements. Its method, like that of Locke or Berkeley, was ultimately introspection, the turning of the mind's eye inward upon itself, and the refinements of laboratory method operated rather as a control upon introspection than as an alteration of it in principle. In short, the structural psychologist still maintained his right to treat mind for a psychological purpose in much the sort of way that the idealist was showing to be fruitless when used for a logical or ethical purpose.

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[1] The work which forms the clearest exception to this statement is Professor Bosanquet's *Logic*, which will stand, I believe, as the sincerest attempt by any Neo-Hegelian to elaborate idealist principles affirmatively. That this feature of the book was so little discussed appears to show that neither the critics nor the idealists realized that the book was the most thorough attempt to do what idealism was in duty bound to undertake.

[2] The manner in which program and fulfillment were confused may be illustrated by a couple of sentences from that admirable prospectus to idealism, Professor Andrew Seth Pringle Pattison's "Philosophy as Criticism of Categories" (1883), reprinted in *The Philosophical Radicals*. "Philosophy, as theory of knowledge, can alone arbitrate between the combatants [the special sciences], by showing the relation of the different points of view to one another, and allowing to each a sphere of relative justification" (p. 335). "From this standpoint [of physical science] every moral action is simply an event, and, as an event, forms a term in a series of mechanical transformations . . . *All that we contend is that the scientific explanation does not exhaust their significance;* so far as they are actions, that is, related to the moral consciousness, it gives no account of them at all" (p. 321). The italics are mine. It is clear that the 'all' for which the author contends in the second quotation is a very modest part of the program sketched in the first.

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[1] *Cf.* Professor Titchener's "The Postulates of a Structural Psychology," PHILOSOPHICAL REVIEW, Vol. VII, p. 449.

In this claim the idealist's criticism of categories was unable to shake the structural psychologist; the criticism took little or no hold upon him, probably because it did not suggest to him any constructive explanation which he could put in the place of the ones to be discarded. The idealist's argument therefore became in effect that, whatever may serve the psychologist's purpose, structural analysis does not in fact serve that of logic or ethics, and the logician or moralist has as much right to his purposes and categories as the psychologist has to his. Psychology was virtually given permission to go where it liked, so long as it kept out of the private preserves of logic and ethics; in fact, the analysis of mind into its elements came to be recognized as the special province of psychology, a beneficent procedure and an inevitable part of the total problem of rationalizing nature, but the root of all evil if it got confused with logic or ethics.[1] The structural psychologist, not to be outdone in generosity, would on occasion admit that the analysis of mental structures could never be an analysis of meanings, since his mental elements, as mere events, had neither meaning nor reference.[2] Thus in return for his undertaking not to bother the psychologist, the logician got an equal liberty to enjoy his own point of view undisturbed. Psychology and logic agreed to disagree. They became distinct investigations, having largely a common subject matter, indeed, since both were concerned with mind, but having points of view so different that they could scarcely be said to come into contact with one another. So far from a correlation of scientific points of view being effected, therefore, logic and structural psychology stood in sharper contrast than had ever been the case with any two philosophical disciplines.

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[1] Thus in the essay by Professor Seth Pringle-Pattison referred to above, the author's criticism of Kant, and by implication of English philosophy, is that it attempted to construct a theory of knowledge from the point of view of psychology (p. 307). On the necessity of each point of view in its own place, *cf.* the following: "The empirical psychologist analyses the most complex states into their elements, and builds up ethical and religious sentiment out of desires and aversions, and all by a process essentially mechanical, without any reference to the unity of the conscious life for which these states exist. Just as the psychologist has neither occasion nor right to consider any special power which he calls the Ego, so the physiologist in the case of the organism. . . . The abstraction is not only defensible but necessary" (p. 326). It is only fair to say that ten years later, in his address on "The 'New' Psychology and Automatism" (1892), Professor Pringle-Pattison held that Professor Münsterberg had abused his liberty, even for purposes of psychology.

[2] Titchener, *loc. cit.*

The situation thus produced was artificial and unwholesome both for psychology and for philosophy. In no real sense did it represent a division of labor, the fruitful coöperation of two sciences for their mutual benefit. Neither the philosopher nor the psychologist seriously expected to gain anything from the progress of the other; it was at bottom an arrangement for preserving appearances. Moreover, the situation was anomalous in the light of the experience of other sciences. Nobody expects that two sciences having nearly the same subject matter will exist side by side without influencing each other constantly; to take a case at random, nobody is surprised when an investigation of heredity in potato-bugs proves to be enlightening for anthropology. And finally the history of philosophy has constantly illustrated the fruitfulness for philosophy of the influence of science in general and of psychology in particular. New constructive points of view in philosophy have largely been the result of new methods and new subjects of scientific investigation; the debt of idealism itself to the advance of the historical and social sciences is a sufficient illustration. In not a few cases the men who created new philosophies were almost if not quite as eminent in the sciences. If, therefore, philosophy shows a tendency toward re-establishing its connections with science, it is merely running true to its type. Such a tendency to reopen avenues of communication is the most promising feature of the philosophical work of the past twenty-five years. In two cases this intercommunication has been especially important, in the increased influence of biology upon psychology and in the influence of psychology upon philosophy.

Looking back upon structural psychology from the vantage ground of the present, it is easy to see that the alliance between psychology and physiology had in fact affected the psychologist's presuppositions far less than he was inclined to suppose. This may be illustrated by a further reference to Professor

Titchener's article on "The Postulates of a Structural Psychology" mentioned above. Certainly there was never any doubt in Professor Titchener's mind that his psychology stood in the closest relationship to physiology in particular and to biology in general. And yet when we examine these biological relationships as Professor Titchener states them, we see that they are quite frankly analogical and nothing more. Structural psychology in its analysis of the mind is the analogue of morphology; functional psychology is the analogue of physiology; and child psychology is the analogue of ontogeny. Structural psychology is defended as the logical first step in the study of mind, since functions can be studied successfully only after the morphology of the (in this case, mental) tissues is known. The functions in question, however, are assumed to be the functions of the mental structures, and though the author is not unaware that mental operations might be regarded as functions of the organism as a whole, he does not appear to see that this view of the matter is quite incompatible with his analogy. For if that is taken to be the case, the structures to be studied are clearly the nervous and other anatomical parts concerned, and there is no occasion for the assumption of mental structures at all. The analogy must imply that we have two subject matters to which identical, or analogous, methods can be applied, the physical organism on the one hand and the mind on the other. The structural and the functional psychologists respectively do for the mind what the anatomist and the physiologist do for the body.

It is clear that, despite the working alliance which he has made with the physiologist, the psychologist has not in principle gone beyond the far older view of the mind and the body as distinct though correlated substances. It is only another phase of the same assumption when the structural psychologist makes introspection his basic method; mind is observed and described, *mutatis mutandis*, as body is. Historically this point of view is that sketched by Descartes and elaborated by the English Empiricists, and though the latter had neglected the correlation with bodily processes, so long as the correlation is conceived as merely parallel or analogical, the omission can hardly be charged against them as a serious logical fault. It becomes a fault only in proportion as the psychophysical unity of the organism is taken seriously. The assumption in question, is, of course, precisely that against which the idealist most frequently directed his criticism, without forcing the psychologist to abandon it. What the criticism of categories failed to accomplish, however, has largely been brought about by the dove-tailing of advancing biological and psychological investigation. The parallel treatment of mind and body has given place to an effort to show the part played by mental operations in the total functioning of the organism, which in principle implies a sounder position both philosophically and psychologically. In philosophy it implies the effectiveness of the mind in functioning, not its mere parallelism with bodily processes, and consequently it implies the revision of the whole untenable theory of two substances. In psychology it involves the immeasurable advance of making the examination of mind and body part of an integral investigation into the behavior of the whole organism.

The changes thus wrought in psychology have been part of larger changes which have extended equally to philosophy. The most tangible result is to be seen in ethics, for the newer psychology has given us a more tenable theory of motives and conduct than we ever had before. Here as elsewhere the final results have certainly not been stated, but it is not too much to say that we already have a much clearer idea of the processes involved in the formation of the moral sentiments and of character than we had twenty-five years ago. The explanation of character, however, has extended its influence far beyond the limits that would once have been set for it, for it has been undertaken from a point of view which necessarily brought the whole problem of knowledge within its scope. Knowledge and the processes by which knowledge comes into being have to be assigned their places as organic and social phenomena. It is this project which appears as the most vital problem of present-day philosophy. The results have not indeed passed beyond the controversial stage, but it is quite safe to say that the controversy will not be settled by the appeal to difference of points of view. The newer issues cannot be turned over to psychology, leaving philosophy intact as it was a generation ago; it is not too much to say that no one any longer wishes this to be done. An effective interaction of science with science has come about and it may be hoped that in time a clearer correlation of scientific points of view will be reached. In this way the idealist's desire may be realized, though by means and with results that he did not contemplate. Rather a surprising number of his criticisms have been made good by the appearance of better explanations to take the place of those which the idealist wished to discard. His ancient enemy, the associational psychology, is gone in all its forms and with it will go its corollaries in ethics, political theory, and economics. The dichotomizing of nature into mind and body, which was another chief object of the idealist's criticism, we may expect to see disappear, or be wholly redefined, with the use of methods of explanation to which the distinction in its older form is irrelevant. And when this occurs, it may be expected that philosophy will find its way clear to rationalize what after all was the idealist's cardinal principle, the effectiveness of mind in nature. If idealism as a system is destined to go the way of all systems, the idealist can scarcely complain that the logic of events has treated him more hardly than is the common lot.

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